

## **CLAIMS:**

1. A method of manufacturing a deodorant including the steps of:
  - forming polymer particles by reacting a main monomer of (N-substituted alkyl)acrylamide, a functional monomer for bonding the polymer particles to a fibrous substrate, a cross-linking agent, and an initiator; and
  - loading a deodorant agent to the polymer particles.
2. The method of Claim 1, wherein the main monomer is selected from the group consisting of N-isopropyl acrylamide, N-methylacrylamide, N-ethylacrylamide, N-n-butylacrylamide, N-n-propylacrylamide, N-n-propylmethacrylamide, N-isopropylmethacrylamide, N-ethylmethacrylamide, N-acroylpiperidine, N-methacroylpiperidine, N-pyrrolidylmethylacrylamide, N-piperidylmethylacrylamide, and N,N'-diethylacrylamide, and N-isopropylacrylamide.
3. The method of Claim 2, wherein the main monomer is in an amount of 80% to 90% by weight of the polymer particles.
4. The method of Claim 1, wherein the functional monomer is selected from the group consisting of acrylamide, allyl alcohol, n-(isobutoxymethyl)acrylamide, N-(isobutoxymethyl)methacrylamide, m and p-vinylbenzyl alcohol, cyanomethyl methacrylate, 2-poly(ethyleneoxy)ethyl acrylate, methacryloyloxypolyglycerol, glyceryl methacrylate, 2-hydroxyethyl acrylate, 2-hydroxypropyl acrylate, 2-hydroxypropyl methacrylate, N-vinyl-2-pyrrolidone, p-aminostyrene, aconitic acid, acrylic acid, methacrylic acid, fumaric acid, itaconic acid, maleic acid, 2-methacryloyloxyethylsulfuric acid, sodium salt, pyridinium 2-methacryloyloxyethylsulfate, 3-acrylamidopropane-1-sulfonic acid, potassium salt, p-styrenesulfonic acid, sodium salt, 3-methacryloyloxypropane-1-sulfonic acid, sodium salt, 2-acrylamido-2-methylpropanesulfonic acid, methacrylic acid, lithium methacrylate, 2-methacryloyloxyethyl 1 sulfonic acid ammonium p-styrenesulfonate, sodium o and p-styrenesulfonate, N-(3-acrylamidopropyl)ammonium methacrylate, N-(2-methacryloyloxyethyl)- N,N,N-trimethylammonium iodide, N-(2-methacryloyloxyethyl)-N,N,N- trimethylammonium p-toluenesulfonate, 1,2-dimethyl-

- 5-vinylpyridinium methosulfate, N-(2-methacryloyloxyethyl)-N,N,N-trimethylammonium bromide, N,N-trimethylammonium fluoride, N-vinylbenzyl-N,N,N-trimethylammonium chloride, 3-methyl-1-vinylimidazolium methosulfate, N-(3-methacrylamidopropyl)-N-benzyl-N,N-dimethylammonium chloride, and N-(3-methacrylamidopropyl)-N,N,N-trimethylammonium chloride.
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5. The method of Claim 4, wherein the functional monomer is in an amount of 5% to 15% by weight of the polymer particles.
- 10 6. The method of Claim 1, wherein the cross-linking agent is selected from the group consisting of 2-(diethylamino)ethyl acrylate, 2-(dimethylamino)ethyl acrylate, 2-(dimethylamino)ethyl methacrylate, and 2-(diethylamino)ethyl methacrylate, and N,N'-methylenebisacrylamide (BisAAm).
- 15 7. The method of Claim 6, wherein the cross-linking agent is in an amount of 1% to 10% by weight of the polymer particles.
8. The method of Claim 1, wherein the polymer particles have a lower critical solution temperature, and the polymer particles are formed at a temperature above the lower critical solution temperature.
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9. The method of Claim 1, wherein the polymer particles are attached to the fibrous substrate by hydrogen-bond.
- 25 10. The method of Claim 1, wherein the polymer particles are attached to the fibrous substrate by a binding agent.
11. The method of Claim 10, wherein the binding agent is selected from the group consisting of polyglycols, polycarboxylic acids, polycarboxylates, poly(lactone)s polyols, polyamides, polyamines, polysulfonic acids, polysulfonates, gamma-
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aminopropyltrialkoxysilanes, gamma-isocyanatopropyltriethoxysilane, vinyl-trialkoxysilanes, glycidoxypropyltrialkoxysilanes and ureidopropyltrialkoxysilanes.

12. The method of Claim 1, wherein the deodorant agent is selected from the group consisting of C18:1 dioic acid, C18:2 dioic acid, and phenyl compounds.
13. The method of Claim 12, wherein the phenyl compound is selected from the group consisting of phenyl alcohols, phenyl acids, and phenyl esters.
14. The method of Claim 13, wherein the phenyl alcohols are selected from the group consisting of benzyl alcohol, 2-hydroxybenzyl alcohol, 2,3-dimethoxybenzyl alcohol, t-butylhydroquinone, pyrocatechol, and 2-amino-4-nitrophenol.
15. The method of Claim 13, wherein the phenyl acids are selected from the group consisting of gallic acid, benzoic acid, salicylic acid and ferulic acid.
16. The method of Claim 13, wherein the phenyl esters are selected from the group consisting of benzyl cinnamate, monoterpene derivatives including geranic acid, sterols including cholesterol, and ergosterol, steroids including testosterone, and androstenedione, flavonoids including naringenin, isosakuranetin, eriodictyol, and genistein, steryl esters including amyrin cinnamate, 2,7-naphthalenediol, oxyquinoline, and cyclodextrins and their derivatives thereof.
17. The method of Claim 1, wherein the deodorant agent is loaded during synthesis of the polymer particles.
18. The method of Claim 1, wherein the deodorant agent is loaded by hydrophobic interaction with the polymer particles.

19. The method of Claim 1, wherein the initiator is selected from the group consisting of persulfates, peroxides, azo-contained compounds and redox initiators.